CUBIC
DEFENSE APPLICATIONS

SPS Software Portability

Cubic Defense Applications
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Available Tools

- **HAL (Hardware Abstraction Layer)**
  - A structure (software) that has a device as a support
  - Helps isolate the device details from the block on top of the support device
  - It makes integration much easier
  - Exports an API to upper layers for handling H/W issues
  - And of course, helps in defining portable waveforms

- **RDL (Radio Description Language, e.g. Vanu, Inc.)**
  - It shows how the application and the signal processing interface can be structured to enable platforms to support a larger variety of waveforms

Available Tools (continued)

- **Matlab (Simulink)**
  - Graphic and language description of H/W with links to H/W implementation
- **Automatic Code Generating Software e.g. HandelC and System C**
- **Generate standards for continued IP and Cores development**
- **Based on economic constraints companies such as Cubic and others are implementing processes conducive to waveform portability**

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- **Define a Reference SDR Architecture**
  - A collection of components, modules and software needed to accommodate a basic set of waveforms waveforms (in use or generic) and associated reconfigurable interconnects (e.g. RapidIO)
- **Define a HAL structure or RDL**
  - It will be an interface for Device Hardware, Device Drivers and the upper levels e.g. OS, Middleware, CF and Applications (Waveforms)
- **Device Developers to supply in-circuit programmable components**
  - Ability to generate necessary VHDL or assembly code under SAD (Software Assembly Descriptor) control or any other compliant code

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- A SDR should as a minimum conform to the Reference SDR architecture
- A new SDR design should be in-field up-gradable so as to support new waveform applications
- Develop CORBA IDL to translate the upper level requirements into FPGA configuring code (e.g. HandelC) or DSP assembly code

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(COTS Jan 2003 & RapidIO Alliance)